

Application No.: 09/827,942
Amendment Dated September 6, 2007
Reply to Office Action of June 8, 2007

MICR-109US

Remarks/Arguments:

Claims 1-21 are pending in the above-referenced application. Claims 1, 9 and 17 have been amended. No new material is introduced herein.

Claims 1-3, 6, 9, 10, 16, 17 and 21 were rejected under 35 U.S.C. § 103(a) as obvious over Dobusch et al. (U.S. Patent No. 6,850,276), Gowda et al. (U.S. Patent No. 6,275,259) and Fearnside et al. (U.S. Patent No. 4,278,995). Claims 4, 8, 11-14, 18 and 19 were rejected under 35 U.S.C. § 103(a) as obvious over Dobusch, Gowda, Fearnside and Kim (U.S. Patent No. 6,587,144). Claims 7, 15 and 20 were rejected under 35 U.S.C. § 103(a) as obvious over Dobusch, Gowda, Fearnside and Embler (U.S. Patent No. 6,654,054). Applicants request reconsideration. In particular, neither Dobusch, nor Gowda, nor Fearnside, nor Kim, nor Embler, nor their combination, disclose or suggest the following limitations of claim 1:

...providing a high signal and a low signal based on an image signal of a previously processed pixel of the multicolor pixel array, the previously processed pixel having a single color designation...

...digitizing an analog signal of a current pixel of the multicolor pixel array, which has the same single color designation as the previously processed pixel....

Claims 9 and 17 include similar recitations. Basis for this amendment may be found, for example, at page 7, lines 28-31 and page 8, lines 16-18. Specifically, for example, page 7, lines 28-31 indicate that each pixel has a single color designation. Additionally, for example, page 8, lines 16-18 explain that an image signal of the previously processed pixel and an image signal of the current pixel have the same color designation.

Dobusch discloses a system for detecting brightness signals from a series of pixels. As shown in Fig. 1, the system relevantly includes adjustable amplifier 2, analog to digital converter (A/D) 3 and control unit 4 (hereinafter A/D 3). Adjustable amplifier 2 successively amplifies each brightness signal from each pixel by a gain factor of v . A/D 3 converts the analog brightness signal provided by adjustable amplifier 2 into a digital brightness signal. Control unit 4 then checks the digital brightness signal to determine whether it is beyond the working range of A/D 3. Next, control unit 4 steps down gain factor v to a working value $v(x)$. Working value $v(x)$ is then used as the gain factor for processing the next pixel. In this way, the working gain value for the currently processed pixel is used to adjust the gain in processing the next pixel. The Examiner admits that Dobusch does not disclose a multicolor array. Further, Dobusch does not disclose that the currently processed pixel and the previously processed pixel have the same color designation. Thus, Dobusch does not disclose all the features of claims 1, 9 and 17, as amended.

MICR-109US

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Gowda discloses an automatic gain control circuit. As shown in Fig. 1, automatic gain control circuit 100 relevantly includes pixel array 102 and A/D 104. A/D 104 processes all of the pixels in pixel array 102 with the same AGC value. Further, A/D 104 has additional inputs for V_{max} and V_{min} values. The V_{max} and V_{min} values are derived using output values of A/D 104 from a previous frame to convert analog electrical signal outputs of the current frame to corresponding digital values. Thus, automatic gain control circuit 100 operates on the entire pixel array as opposed to operating on one pixel at a time. This is different from Applicants' claim 1 because Applicants require that each pixel is operated on separately. Accordingly, Gowda also does not disclose that the currently processed pixel and the previously processed pixel have the same color designation. Thus, Gowda does not disclose all the features of claims 1, 9 and 17, as amended.

Fearnside relevantly discloses three separate arrays. Each of the three separate arrays includes pixels which all have the same single color designation. A single color filter is disposed over each respective one of the three separate arrays, "thereby obviating the need to define a separate filter over each element of each array." See column 2, lines 6-29. Accordingly, the Examiner argues that "it would be obvious to one skilled in the art at the time of the invention to have been motivated to have a multicolor pixel array as taught in Fearnside so that the current pixel has the same color designation as the previously processed pixel used to digitize the current pixel when used in the system of Dobusch in view of Gowda in order to obviate the need to define a separate filter over each element of the array...thereby making the process of manufacturing the multicolor arrays easier and economical."

Claims 1, 9 and 17, however, require operation on pixels of a multicolor array. Fearnside does not disclose a multicolor array. Instead, Fearnside discloses a plurality of single color arrays. Thus, Fearnside does not include all the features of claims 1, 9 and 17, as amended. Further, it would not be obvious to combine Fearnside with Dobusch and Gowda "so that the current pixel has the same color designation as the previously processed pixel used to digitize the current pixel" because Fearnside does not disclose a multicolor array. Instead, Fearnside teaches away from use of a multicolor array. "[T]he process of filter fabrication for individual photosensing sites is difficult, and the light absorbed by a filter over one color photosite is unavailable to another photosite of the same picture element group, thereby reducing the light gathering efficiency of the sensor." See col. 1, lines 59-64.

Kim discloses an analog signal processing apparatus. As shown in Fig. 3, the apparatus includes a correlated double sampling (CDS) circuit 100, an automatic gain control (AGC) circuit 200, an A/D and converter 300 and a black level clamp circuit 400. CDS 11 adjusts a DC level

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signal output from a CCD using a black level as a reference and converts the DC level signal into a video signal. AGC 200 adjusts the gain of the signal output from CDS 11. A/D 300 converts the signal to a digital image signal. Black level clamp circuit 400 clamps the black level of the signal output from A/D 300 and feeds the clamped black level back to CDS 100. Kim does not disclose that the currently processed pixel and the previously processed pixel have the same color designation. Thus, Kim does not disclose all the features of claims 1, 9 and 17, as amended.

Embler discloses a method and apparatus for canceling noise in an electronic signal. The apparatus relevantly includes a control means, a storage means and a summing circuit. The control means controls timing of a noise signal generated by a source. The storage means stores an anti-noise signal, which is a complement of the noise signal. The summing circuit sums the noise and anti-noise signals together. Because Embler's method and apparatus deal with noise cancellation, Embler does not disclose that the currently processed pixel and the previously processed pixel have the same color designation. Thus, Embler does not disclose all the features of claims 1, 9 and 17, as amended.


Because neither Dobusch, nor Gowda, nor Fearnside, nor Kim, nor Embler, nor their combination, disclose or suggest these limitations of claims 1, 9 and 17, these claims are not subject to rejection under 35 U.S.C. § 103(a) as being obvious over Dobusch, Gowda and Fearnside. Claims 2, 4 and 6-8 depend from claim 1; claim 3 depends from claim 2; claim 5 depends from claim 4; claims 10 and 15-16 depend from claim 9; claims 11 and 13 depend from claim 10; claim 12 depends from claim 11; claim 15 depends from claim 13; and claims 18-21 depend from claim 17. Accordingly, claims 2-3, 6, 10, 16 and 21 are not subject to rejection under 35 U.S.C. § 103(a) as being obvious over Dobusch, Gowda and Fearnside, claims 4-5, 8, 11-14 and 18-19 are not subject to rejection under 35 U.S.C. § 103(a) as being obvious over Dobusch, Gowda, Fearnside and Kim and claims 7, 15 and 20 are not subject to rejection under 35 U.S.C. § 103(a) as being obvious over Dobusch, Gowda, Fearnside and Embler, for at least the same reasons as the claims from which they depend.

Application No.: 09/827,942
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MICR-109US

In view of the foregoing amendments and remarks, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1-21.

Respectfully submitted,


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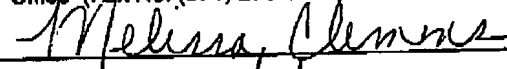
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